



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

Note to Reader

Background: As part of its effort to involve the public in the implementation of the Food Quality Protection Act of 1996 (FQPA), which is designed to ensure that the United States continues to have the safest and most abundant food supply.

EPA is undertaking an effort to open public dockets on the organophosphate pesticides. These dockets will make available to all interested parties documents that were developed as part of the U.S. Environmental Protection Agency's process for making reregistration eligibility decisions and tolerance reassessments consistent with FQPA. The dockets include preliminary health assessments and, where available, ecological risk assessments conducted by EPA, rebuttals or corrections to the risk assessments submitted by chemical registrants, and the Agency's response to the registrants' submissions.

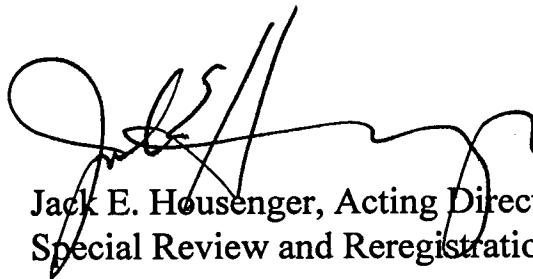
The analyses contained in this docket are preliminary in nature and represent the information available to EPA at the time they were prepared. Additional information may have been submitted to EPA which has not yet been incorporated into these analyses, and registrants or others may be developing relevant information. It's common and appropriate that new information and analyses will be used to revise and refine the evaluations contained in these dockets to make them more comprehensive and realistic. The Agency cautions against premature conclusions based on these preliminary assessments and against any use of information contained in these documents out of their full context. Throughout this process, If unacceptable risks are identified, EPA will act to reduce or eliminate the risks.

There is a 60 day comment period in which the public and all interested parties are invited to submit comments on the information in this docket. Comments should directly relate to this organophosphate and to the information and issues available in the information docket. Once the comment period closes, EPA will review all comments and revise the risk assessments, as necessary.

These preliminary risk assessments represent an early stage in the process by which EPA is evaluating the regulatory requirements applicable to existing pesticides. Through this opportunity for notice and comment, the Agency hopes to advance the openness and scientific soundness underpinning its decisions. This process is designed to assure that America continues to enjoy the safest and most abundant food supply. Through implementation of EPA's tolerance reassessment program under the Food Quality Protection Act, the food supply will become even safer. Leading health experts recommend that all people eat a wide variety of foods, including at least five servings of fruits and vegetables a day.

Note: This sheet is provided to help the reader understand how refined and developed the pesticide file is as of the date prepared, what if any changes have occurred recently, and what new information, if any, is expected to be included in the analysis before decisions are made. **It is not meant to be a summary of all current information regarding the chemical.** Rather, the sheet provides some context to better understand the substantive material in the docket (RED chapters, registrant rebuttals, Agency responses to rebuttals, etc.) for this pesticide.

Further, in some cases, differences may be noted between the RED chapters and the Agency's comprehensive reports on the hazard identification information and safety factors for all organophosphates. In these cases, information in the comprehensive reports is the most current and will, barring the submission of more data that the Agency finds useful, be used in the risk assessments.

A handwritten signature in black ink, appearing to read 'J. Housenger', is written over the typed name and title.

Jack E. Housenger, Acting Director
Special Review and Reregistration Division

[Signed June 16, 1999]

MEMORANDUM

SUBJECT: Tier 1 Drinking Water Assessment for Land Farming of Bioremediated Coumaphos from Cattle Dips

FROM: James A. Hetrick, Ph.D., Soil Chemist
Environmental Risk Branch 1
Environmental Fate and Effects Division (7507C)

THRU: Kevin Costello, Geologist
and
Arnet Jones, Branch Chief
Environmental Risk Branch 1
Environmental Fate and Effects Division (7507C)

TO: Monica Alvarez
Special Review Branch
Special Review and Reregistration Division (7508W)

This Tier 1 drinking water assessment is conducted as a FQPA drinking water assessment to support land farming of bioremediated O,O -diethyl O-3-chloro-4-methyl-2-oxo-2H-1-benzopyran-7-yl phosphorothioate (coumaphos) from cattle dips. Most of the uncertainty in the assessment is associated with the lack of acceptable environmental fate data for parent coumaphos and its degradate O,O-diethyl O-3-chloro-4-methyl-2-oxo-2H-1-benzopyran-7-yl phosphate (coumaphoxon). Because coumaphoxon is included in the Health Effects Division tolerance expression, it is considered in the water assessment. Additional uncertainty is associated with the application rates of coumaphos and coumaphoxon in bioremediated cattle dips. Subdivision N aerobic soil metabolism and batch equilibrium studies are needed for coumaphoxon. These data, in addition to defined application rates, are needed to confirm the conservativeness of the Tier 1 modeling. Please refer to the section on model input parameter selection for more details.

GENEEC modeling predicts that the total coumaphos residue concentration (coumaphos + coumaphoxon) in surface water used as drinking water are not likely to exceed 2.213 µg coumaphos equivalents/L for the maximum annual concentration (acute) and 1.606 µg coumaphos equivalents/L for the 56 day average concentration (chronic). SCIGROW modeling predicts that the total coumaphos residue concentration in groundwater used as drinking water is not likely to exceed 17.202 µg coumaphos equivalents/L.

Modeling Input Parameters

The main uncertainty in the Tier 1 water assessment is associated with the lack of acceptable environmental fate data for coumaphos and its degradate coumaphoxon. The EFED environmental fate database for coumaphos indicates it is persistent ($t_{1/2} > 1$ year) and relatively immobile ($K_d=61$ to 298 ml/g; $K_{oc}=3,994$ to $11,422$) in soil. Photodegradation in water appears to a major route of degradation ($t_{1/2}=33.16$ hours or 1.38 days). There are no environmental fate data for the coumaphoxon. As a conservative estimate, it is assumed that coumaphoxon is persistent ($t_{1/2} > 1$ year) and highly mobile ($K_{oc}=0.1$). The use of default parameters is not Agency policy; however, the use of such values provides a conservative exposure assessment.

Other uncertainties in the modeling are associated with the application rate of coumaphos and coumaphoxon. Based on EFED guidance on proposed USDA land farming methods (D230394 and D239676, 6/4/98), coumaphos should be applied at a maximum application rate of 0.22 lbs ai/A. This application rate assumes that 10,000 L of solution containing 10 µg coumaphos/ml is spread over an acre field. EFED notes this is a recommended application rate for coumaphos. Another uncertainty is the lack of information on the concentration of degradation products in the bioremediated coumaphos solutions. Supplemental photodegradation in water data (MRID 42764101 and 42764102) indicate the maximum coumaphoxon concentration at any sampling time was 10.2% of coumaphos application rate. This conversion efficiency was used to estimate a coumaphoxon application rate of 0.02 lbs ai/A.

RUN No. 2 FOR coumaphos INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPB)	% SPRAY INCORP DRIFT DEPTH(IN)
--------------------------	------------------------------	-------------	---------------------	-----------------------------------

.220(.220)	1 1	3994.0	50.0	.0 .0
-------------	-----	--------	------	-------

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC DAYS UNTIL HYDROLYSIS (FIELD)	RAIN/RUNOFF (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC COMBINED (POND)
--	-----------------------	--------------------------	------------------------------

.00	2	N/A	1.38- 169.33 .00 169.33
-----	---	-----	-------------------------

GENERIC EECs (IN PPT)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
--------------	-----------------------	------------------------	------------------------

983.49	891.30	582.47	376.27
--------	--------	--------	--------

RUN No. 2 FOR coumaphoxon INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPB)	% SPRAY INCORP DRIFT DEPTH(IN)
--------------------------	------------------------------	-------------	---------------------	-----------------------------------

.022(.022)	1 1	.1	50.0	.0 .0
-------------	-----	----	------	-------

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC DAYS UNTIL HYDROLYSIS (FIELD)	RAIN/RUNOFF (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC COMBINED (POND)
--	-----------------------	--------------------------	------------------------------

.00	2	N/A	.00- .00 .00 *****
-----	---	-----	--------------------

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
--------------	-----------------------	------------------------	------------------------

1.23	1.23	1.23	1.23
------	------	------	------

RUN No. 2 FOR coumaphos INPUT VALUES

APPL (#/AC) APPL. URATE SOIL SOIL AEROBIC
RATE NO. (#/AC/YR) KOC METABOLISM (DAYS)

.220 1 .220 3994.0 365.0

GROUND-WATER SCREENING CONCENTRATIONS IN PPB

.005274

A= 360.000 B= 3999.000 C= 2.556 D= 3.602 RILP= 1.018
F= -1.620 G= .024 URATE= .220 GWSC= .005274

RUN No. 2 FOR coumaphoxon INPUT VALUES

APPL (#/AC) APPL. URATE SOIL SOIL AEROBIC
RATE NO. (#/AC/YR) KOC METABOLISM (DAYS)

.022 1 .022 .1 365.0

GROUND-WATER SCREENING CONCENTRATIONS IN PPB

17.197110

A= 360.000 B= 5.100 C= 2.556 D= .708 RILP= 8.416
F= 2.893 G= 781.687 URATE= .022 GWSC= 17.197110